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EXAMINER

IRVIN, THOMAS W

ART UNIT	PAPER NUMBER
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3657

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/576,029	Applicant(s) KAMAMOTO ET AL.	
	Examiner THOMAS W. IRVIN	Art Unit 3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6-10 and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 6 defines friction transmission members, first pins, and second pins as separate and different members. Claim 6 later defines the friction transmission members as contacting the sheaves, and the first pins and second pins as being in rolling contact with each other. Since at least one of the pins contact the sheaves, and the pins are in rolling contact with each other, it appears that either applicant means to name one of the pins the friction contact member, or that applicant is claiming a 3rd pin not disclosed in the specification or shown in the drawings.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 6-11 and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites that the friction transmission member contact the sheaves, and that there are a plurality of first pins and a plurality of second pins, and that the plurality of first pins includes two or more different widths of pins. It is not clear what applicant is referring to as the plurality of first pins or the friction transmission members.

Claim 11 appears to be claiming the same transmission structure as previously recited in claim 1, and is therefore indefinite because it is unclear what limitations are incorporated by the phrase “wherein the power transmission chain comprises one set forth in claim 1”.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 11-17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Greiter (6,135,908).

In Re claims 1, 2, 11, and 21 Greiter discloses a power transmission chain entrainable between a first pulley (204) and a second pulley (205), the power transmission chain comprising a plurality of links (10a,10b,10c) possessing through-

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holes, and a plurality of pins (4a,4b) inserted through the through-holes for interconnecting the plurality of links, the power transmission chain transmitting power by way of contact between opposite end faces of each of the pins and the sheave surfaces of the first and second pulleys, wherein the plurality of pins substantially have the same length in the longitudinal direction, and the plurality of pins include plural types of pins (4a,4b) having different rigidities in the longitudinal direction thereof. A plurality of the plurality of pins having different sectional shapes (see Fig. 1). The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities.

In Re claims 3 and 12, a first group of pins (4a) of the plurality of pins (4a,4b) have substantially the same sectional shape and sectional area, and a second group of pins (4b) have a different sectional area than the first group of pins.

In Re claims 4, 13, and 14, see pins (4a,4b) which have different shapes and widths, and links (10a,10b,10c) which have different pitches.

In Re claims 5 and 15-17, the sectional area of a first group of pins (4b) appears to be between 1.1 and 2 times the sectional area of a second group of pins (4a) (see Fig. 1).

Claims 1-3, 5, 11, 12, 15, 16, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Anpo (JP 01-169149).

In Re claims 1, 2, 11, and 21, Anpo discloses a power transmission chain (50) entrainable between a first pulley (52) and a second pulley (54), the power transmission

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chain comprising a plurality of links (10a,10b) each possessing through-holes (11), and a plurality of pins (12a₂,12b₂,12c₂) inserted through the through-holes for interconnecting the plural links, the power transmission chain transmitting power by way of contact between opposite end faces of each of the pins and the sheave surfaces of the first and second pulleys, wherein the plurality of pins substantially have the same length in the longitudinal direction (see Fig. 6), and the plurality of pins include plural types of pins (see figs. 8-10) having different rigidities in the longitudinal direction thereof. A plurality of the plurality of pins having different sectional shapes (see Figs. 8-10). The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities.

In Re claims 3 and 12, a first group of pins (12a₂) of the plurality of pins have substantially the same sectional shape and sectional area, and a second group of pins (12b₂) have a different sectional area than the first group of pins, and a third group of pins (12c₂) have even a different sectional area.

In Re claims 5, 15, and 16, the sectional area of a groups of pins (12a,12b,12c) appears to be between 1.1 and 2 times the sectional area of a the other groups of pins (see Figs. 8-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-10 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiter (6,135,908) in view of Van Rooij et al. (5,728,021).

In Re claims 6, 9, 19, and 20, Greiter discloses a power transmission chain entrainable between a first pulley (204) and a second pulley (205), the power transmission chain comprising a plurality of links (10a,10b,10c) possessing through-holes, and a plurality of frictional transmission members (4a,4b) inserted through the through-holes for interconnecting the plurality of links, the power transmission chain transmitting power by way of contact between opposite end faces of each of the plural chain friction transmission members and the sheave surfaces of the first and second pulleys, wherein the plurality of frictional transmission members are brought into relative movement in rolling contact thereby permitting the bending of the chain, and wherein the plurality of friction transmission members include plural types of friction transmission members (4a,4b) having different rigidities in the longitudinal direction thereof. The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities. Additionally, the examiner notes that the pins and friction transmission members are best understood to be one in the same. Greiter fails to disclose the curvature of the friction transmission members.

Van Rooij et al. teach including power transmission members in a power transmission chain having a curvature of an involute of a circle (see col. 2, lines 15-18,

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and col. 5, lines 37-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the friction transmission members of Greiter to have a curvature of an involute of a circle, as taught by Van Rooij et al., to reduce and randomize the chordal action caused by the contact between the friction transmission members and links of the power transmission chain.

In Re claim 7, as best understood, all of the pins are friction transmission members and therefore have substantially the same length in the longitudinal direction thereof.

In Re claims 8 and 18, Greiter further disclose that a first group of friction transmission members (4a) of the plurality of friction transmission members (4a,4b) have substantially the same sectional shape, area, and width, and a second group of friction transmission members (47) have a different sectional shape, area, and width that the first group of friction transmission members.

In Re claim 10, Greiter further discloses links (10a,10b,10c) which have different pitches, and a first group of friction transmission members (4a) of the plurality of friction transmission members (4a,4b) have substantially the same sectional shape, area, and width, and a second group of friction transmission members (47) have a different sectional shape, area, and width that the first group of friction transmission members.

Claims 4, 13, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anpo (JP 01-169149) as applied to claims 1 and 2 above, and further in view of Zimmer (4,718,880).

In Re claims 4, 13, and 14, Anpo fail to teach links having different pitches.

Zimmer teaches, with reference to Fig. 9, arranging links (68a,70a,72a), with differing pitches, randomly in a chain (see col. 1 and 2, lines 60-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the chain of Anpo, to include links of differing pitches, as taught by Zimmer, to lessen the noise of the chain against the sheaves, without affecting the tensional strength of the chain.

In Re claim 17, the sectional area of a first group of pins (12a) appears to be between 1.1 and 2 times the sectional area of a second group of pins (47) (see Fig. 4 of '021).

Claims 6-9 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anpo (JP 01-169149) in view of Van Rooij et al. (5,728,021).

In Re claims 6, 8, and 18, Anpo disclose a power transmission chain (50) entrainable between a first and second pulley possessing conical sheave surfaces (see Fig. 11) and transmitting power by way of contact between opposite end faces of plural chain friction transmission members (12a₂,12b₂,12c₂) and the sheave surfaces of the first and second pulleys, the chain friction transmission members arranged along a chain longitudinal direction at predetermined space intervals, the chain comprising a plurality of links (10a,10b) each possessing first and second through-holes (11) arranged in the chain longitudinal direction, and a plurality of first and second pins (12a,12b,12c), each of the plurality of pins penetrates the first through-hole of one link

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and the second through-hole of another other link thereby interconnecting the links, adjoining in a chain widthwise direction, in a manner to provide bending in the chain longitudinal direction, wherein the pins are fixed in the first through-hole of the one link and movably fitted in the second through-hole of the other link, and also movably fitted in the first through-hole of the one link and fixed in the second through-hole of the other link, so as to be brought into relative movement in rolling contact thereby permitting the bending of the chain. The first pins and second pins are combined to form two or more types of pairs. The friction transmission members have mutually different rigidities in the chain widthwise direction due to their differing shape (see figs. 8-10). The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities. Anpo fails to teach a curvature of the pins being an involute of a circle.

Van Rooij et al. teach including power transmission members in a power transmission chain having a curvature of an involute of a circle (see col. 2, lines 15-18, and col. 5, lines 37-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pins of Anpo to have a curvature of an involute of a circle, as taught by Van Rooij et al., to reduce and randomize the chordal action caused by the contact between the pins and links of the power transmission chain.

In Re claim 7, see friction transmission members (12a₂, 12b₂, 12c₂) in Fig. 6 of Anpo.

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In Re claims 9, 19, and 20, as best understood, the friction transmission members (12a₂, 12b₂, 12c₂) are pins.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anpo (JP 01-169149) in view of Van Rooij et al. (5,728,021) as applied to claim 6 above, and further in view of Zimmer (4,718,880).

Anpo, as modified, fail to teach links having differing pitches.

Zimmer teaches, with reference to Fig. 9, arranging links (68a, 70a, 72a), with differing pitches, randomly in a chain (see col. 1 and 2, lines 60-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the chain of Anpo, as modified, to include links of differing pitches, as taught by Zimmer, to lessen the noise of the chain against the sheaves, without affecting the tensional strength of the chain.

Claims 1-3, 5-9, 11, 12, 15, 16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rooij et al. (5,728,021) in view of Anpo (JP 01-169149).

In Re claims 1, 2, 11, and 21, Van Rooij et al. discloses a power transmission chain entrainable between a first pulley possessing conical sheave surfaces (65) and a second pulley possessing conical sheave surfaces (67), the power transmission chain (31) comprising a plurality of links (33, 53) each possessing through-holes (35, 37), and a plurality of pins (45) inserted through the through-holes for interconnecting the plural

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links, the power transmission chain transmitting power by way of contact between opposite end faces of the each of the pins and the sheave surfaces of the first and second pulleys, wherein all the plurality of pins substantially have the same length in the longitudinal direction (see Fig. 3). Van Rooij et al. fail to teach plural types of pins with different areas and rigidities in the longitudinal direction.

Anpo teaches including a plurality of types of pins (12a₂, 12b₂, 12c₂) having different areas and rigidities in the longitudinal direction thereof. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the power transmission chain of Van Rooij et al. to include a plurality of types of pins, as taught by Anpo, to reduce and randomize the chordal action caused by the contact between the pins and links of the power transmission chain. The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities.

In Re claims 3 and 12, in the chain as modified, a first group of pins (12a₂) of the plurality of pins have substantially the same sectional shape and sectional area, and a second group of pins (12b₂) have a different sectional area than the first group of pins, and a third group of pins (12c₂) have even a different sectional area.

In Re claims 5, 15, and 16, the sectional area of a groups of pins (12a, 12b, 12c) appear to be between 1.1 and 2 times the sectional area of a the other groups of pins (see Figs. 8-10 of Anpo).

In Re claims 6, 8, and 18, Van Rooij et al. disclose a power transmission chain (31) entrainable between a first and second pulley possessing conical sheave surfaces

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(see Fig. 5) and transmitting power by way of contact between opposite end faces of plural chain friction transmission members (45) and the sheave surfaces (65,67) of the first and second pulleys, the chain friction transmission members arranged along a chain longitudinal direction at predetermined space intervals, the chain comprising a plurality of links (33,53) each possessing first and second through-holes (35,37) arranged in the chain longitudinal direction, and a plurality of first pins (45) and second pins (47), each of the plurality of pins penetrates the first through-hole of one link and the second through-hole of another other link thereby interconnecting the links, adjoining in a chain widthwise direction, in a manner to provide bending in the chain longitudinal direction, wherein the pins are fixed in the first through-hole of the one link and movably fitted in the second through-hole of the other link, and also movably fitted in the first through-hole of the one link and fixed in the second through-hole of the other link, so as to be brought into relative movement in rolling contact thereby permitting the bending of the chain. The pins include an involute of a circle (see col. 2, lines 15-18, and col. 5, lines 37-57). Van Rooij et al. fail to disclose plural types of first pins.

Anpo teaches making a power transmission chain (50) with several types of pins (12a,12b,12c) randomly installed throughout the chain. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the first pins of Van Rooij et al. to have included several different types of pins, as taught by Anpo, to further reduce and randomize the chordal action caused by the contact between the pins and links of the power transmission chain. The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface

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areas of the pins in the chain, as modified, mean that the different pins have different rigidities.

In Re claim 7, see friction transmission members (45) of Van Rooij et al.

In Re claims 9, 19, and 20, as best understood, the first pins are friction transmission members.

Claims 4, 10, 13, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rooij et al. (5,728,021) in view of Anpo (JP 01-169149) as applied to claims 1, 2, and 6 above, and further in view of Zimmer (4,718,880).

Van Rooij et al., as modified, fail to teach links having differing pitches.

Zimmer teaches, with reference to Fig. 9, arranging links (68a,70a,72a), with differing pitches, randomly in a chain (see col. 1 and 2, lines 60-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the chain of Van Rooij et al. as modified, to include links of differing pitches, as taught by Zimmer, to lessen the noise of the chain against the sheaves, without affecting the tensional strength of the chain.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 5, 11, 12, 15, 16, and 21 rejected under 35 U.S.C. 102(b) by Van Rooij et al. have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claims 4, 13, 14, and 17 rejected under 35 U.S.C. 103(a) by Van Rooij et al. in view of Zimmer have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claims 6-10 and 18-20 rejected under 35 U.S.C. 103(a) by Van Rooij et al. in view of Anpo have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's arguments that the pins (12a,12b,12c) of Anpo do not engage the sheaves, examiner points to fig. 5 which clearly show the pins extending, in the widthwise direction of the chain, further than the "load blocks (14) or the links (10b,13). Further, fig. 6 appears to shows an embodiment in which no load blocks are present in the transmission chain at all, as there are no holes or gaps formed between adjacent links where the "load blocks" would be situated.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS W. IRVIN whose telephone number is (571)270-3095. The examiner can normally be reached on Mon-Fri 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bradley T King/
Primary Examiner, Art Unit 3657

/Thomas W. Irvin/
Examiner, Art Unit 3657